

UNITED STATES DISTRICT COURT
DISTRICT OF MINNESOTA

In re: BAIR HUGGER FORCED AIR
WARMING DEVICES PRODUCTS
LIABILITY LITIGATION

This Document Relates To:
All Actions

MDL No. 15-2666 (JNE/FLN)

**DECLARATION OF ALBERT VAN
DUREN IN SUPPORT OF JOINT
OPPOSITION OF NONPARTY
VITAHEAT MEDICAL, LLC AND
DEFENDANTS TO PLAINTIFFS'
MOTION TO OVERRULE
VITAHEAT'S RELEVANCE
OBJECTION**

I, ALBERT VAN DUREN, do declare and state the following:

1. I am Director of Scientific Affairs and Education, Patient Warming Business, Infection Prevention Division at 3M Company ("3M"). I have been an employee of 3M since October of 2010.
2. I submit this declaration at the request of counsel for 3M. I understand from 3M's counsel that the facts stated in this declaration will be used in support of the Joint Opposition of Nonparty VitaHEAT Medical, LLC ("VitaHEAT Medical") and Defendants to Plaintiffs' Motion to Overrule VitaHEAT Medical's Relevance Objection.
3. All of my statements in this Declaration are based on my personal knowledge, education, training and experience in methods and modalities of heat transfer, including courses in bioheat transfer; convection, conduction and radiation heat transfer; compressible fluids; and thermodynamics. My statements in this Declaration are also based on my knowledge and many years of experience in heat transfer modalities in patient

warming systems, including the Bair Hugger Patient Warming System, and my knowledge and experience of patient warming systems working at 3M. Finally, my Declaration statements are based on information that I obtained through conversations with VitaHEAT Medical personnel who have personal knowledge about the VitaHEAT® UB3 Patient Warming System (“UB3 system”) and my understanding of the UB3 system.

4. The Bair Hugger Patient Warming System is a *convective* warming system, meaning that heat is transferred by the movement of warm air. With *convective* warming, heat is transferred from warm air to a surface. The Bair Hugger warming unit generates temperature-controlled warm air, which is then delivered into a blanket with small perforations. Heat transfer is accomplished through the gentle dispersion of warmed air through the small perforations in the Bair Hugger blanket across the patient’s skin. Temperature, air velocity and recruited surface area are key elements in a convective patient warming system.

5. The VitaHEAT® UB3 system employs *conductive* warming (i.e., heat transferred by direct contact such as an electric heating pad). A *conductive* warming system warms patient primarily by the transfer of heat through direct surface-to-surface contact. By the direct contact between two surfaces, such as a heating pad touching a patient’s skin, heat is transferred from a warmer to a cooler surface. There is no movement of air in heat transfer through conduction. Examples of conductive heat transfer are an electric heating pad, a heated water bottle, heated gel pads, or a conductive table pad. Temperature and contact area are key elements in a conductive patient warming system.

6. In essence, convective warming technology is completely different from conductive warming technology. The difference between a convective patient warming system and a conductive patient warming system is the difference between heat transfer by air movement and heat transfer by direct surface-to-surface contact. Accordingly, conductive direct surface-to-surface heat transfer cannot be re-engineered and incorporated into convective air-to-surface heat transfer. The VitaHEAT® UB3's conductive warming technology cannot be incorporated into the Bair Hugger system.

7. It is my understanding that the UB3 patient warming system employs a thin, underbody mattress with patented conductive ink to transfer heat from the mattress to a patient's skin. The patient is placed on the underbody mattress, thus creating direct surface-to-surface contact in order to accomplish heat transfer. Without this surface-to-surface contact, little heat could be transferred to the patient. Just like an electric heating pad, if an individual is not touching the heating pad, the electric heating pad cannot transfer much heat to the individual.

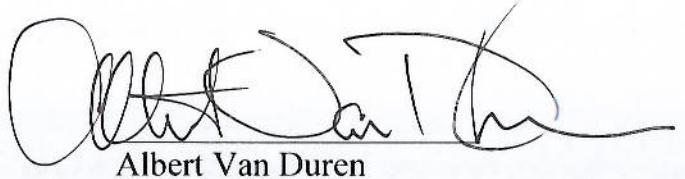
8. In a convective patient warming system, such as the Bair Hugger patient warming system, it is the air movement that transfers heat to a patient. Direct surface-to-surface contact is not essential to the heat transfer process. An example of convective warming is a typical airflow space heater an individual may purchase to warm a living room or bedroom. The individual does not need direct contact with the space heater in order to receive the warm air the space heater transfers.

9. The UB3 system comes with a rechargeable battery as well as an AC outlet plug-in option. 3M entered into an exclusive distributorship agreement with VitaHEAT

Medical because the UB3's mobility capabilities complemented 3M's offerings for patient warming systems. The UB3 system can be used to keep patients continuously warmed during transport to and from the operating room.

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct.

Executed on: February 16 2017



The image shows a handwritten signature in black ink, which appears to read "Albert Van Duren". The signature is fluid and cursive, with some loops and variations in line thickness.

Albert Van Duren